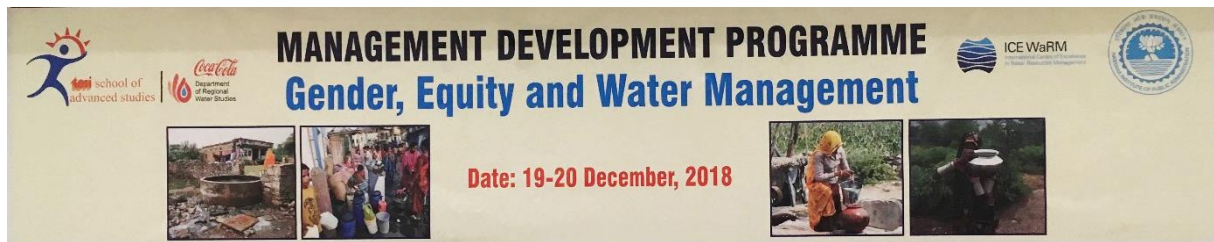


**REPORT ON
MANAGEMENT DEVELOPMENT PROGRAMME ON
GENDER, EQUITY AND WATER MANAGEMENT**



ORGANIZERS

TERI School of Advanced Studies, ICEWaRM, Haryana Institute of Public Administration

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SESSION 1

INAUGURAL SESSION

We all know that gender mainstreaming in planning, decision-making and resource management has been part of the international discourse for over a decade now, gender equality also being one of the 17 Sustainable Development Goals, yet there are crucial challenges in translating rhetoric into reality. The Global Gender Gap Report brought out in 2017 by the World Economic Forum (WEF) places India at 108th position in overall Global Gender Gap Index and more specifically at 139th position in economic participation and opportunity, at 112th position in educational attainment and at 141st position in health and survival out of 144 countries. Often the policies that are made are regarded as gender neutral while most of them are actually gender blind resulting in inequity in access to resources and benefits. This program was therefore designed to build capacities of participants with respect to gender and equity to enable them to work for sustainable and gender sensitive management of water resources.

WELCOME ADDRESS, Mr. Surya Prakash Sethi, UNESCO Chair Professor for Climate Science and Policy, TERI SAS

Mr. Surya Prakash Sethi, UNESCO Chair Professor for Climate Science and Policy, TERI SAS, delineated four observations associated with the theme, "Gender, Equity and Water Management". Underlining that the symptoms are an indication of deeper malaise, he mentioned that the defining image of gender and water is a forlorn lady walking with a pot filled with water on her head. He mentioned that water mirrors the gender equity in various realms for example, decision making, education, poverty, hierarchical process etc. and need to be addressed through policy and planning. Defining gender equity through narrow lens of gender alone is incorrect but apparently equity could become strength in managing resources once the policies are made. Citing that gender is embedded in the social and cultural fabric of the society he brought out the need to answer the who, how, why and what next questions to comprehend the issue in entirety. He elaborated it by stating that a delineation should be made on who is excluded as it could be male or female or a person of certain caste or class, what are the domains and processes by which exclusion are occurring and practices through which it is reinforced, the underlying power structures which fuel inequity and the way to move forward. He emphasized that one of the major challenges in addressing the problem is paucity of to build an understanding of the problem and defining what needs to be done and how it needs to be done.

ADDRESS, Sh. M.D. Sinha, IFS, Additional Director, HIPA

Mr. M. D. Sinha Additional Director, HIPA and Addl. CEO, GMDA in his address brought out that the hydrology of the region from Delhi to Gujarat is shaped by the Aravalli Hills which is 3 billion years old and thus stressed upon the need for Aravalli Conservation. He stated that the alluvium formed is 32 million years old while the younger alluvium is 12000 years old. The

aquifer that is formed is a typical consolidated aquifer and has a low release capacity. The Kotla Dahar near Gurugram is a 23 kilometre stretch area which was once a fresh water lake 4000 years ago but the civilization collapsed due to a drought which lasted for over 200 years. It was also one of the key reasons for the extinction of the Indus valley civilization. He also highlighted how urbanization has ruined the traditional water structures in the region and has led to massive shrinkage of the Common Property Resources (CPRs). He shared the change in water table from 1974 to 2014.

Groundwater Table (in metres)	1974	2014
Gurugram	6.64	33.26
Faridabad	6.24	16.47
Nuh	5.5	21

ADDRESS, Dr. G. Prasanna Kumar, IAS (Retd.), Director General, HIPA

G Prasanna Kumar, IAS(Retd), Director General, HIPA stated that historically water was managed by user groups with women taking an active role in managing hydraulic infrastructure and policy planning for water resources. He also highlighted the systemic effort being put in by the Haryana Government to improve the skewed sex ratio in the state. Emphasizing on the need for participatory approach to managing water, he mentioned about self-help groups (SHGs), Swachh Bharat initiative and microfinance schemes which are majorly women driven. He also brought out the issue of feminization of agriculture and the need for constant capacity development amongst officials towards water management practices especially with respect to gender equity, women’s empowerment and women’s rights in water management. He also stated that the SDG 5 and SDG 6 that is gender equity and clean water and sanitation respectively form part of the global goals and need to be successfully achieved by 2030. Highlighting the issue of gender equity in the state of Haryana, he mentioned that according to 2011 census the state has the lowest child sex ratio in India with 834 and a sex ratio of 879. He further shared the effort being put in by the government has yielded in the sex ration improving to 914 in 2017.

INAUGURAL ADDRESS Dr. Darryl Day, Managing Director, ICE WaRM

Mr. Darryl Day, Managing Director ICE WaRM, an organization engaged in promoting collaborative approaches to capacity development for water management. In Australia, the pursuit of gender equality is embedded within all government policies and decision-making processes, which attends to the needs of all groups in society. The Australian Government has a steadfast and ongoing commitment to be at the forefront of efforts to promote gender equality and the empowerment of women and girls, particularly in the Indo-Pacific region. The Australian Government has committed to a gender diversity target of women holding 50% of Government board positions overall. As of 30 June 2018, women held 45.8 per cent of positions. He spoke on how important SDG 17- Partnership is in achieving a sustainable water management on a global scale. In his presentation, he stated that the Murray Darling

basin has 20% of the Australian waters stretching up to 2530 kilometres. The 6% of rainfall received in the region provides 75% of the irrigation water and produces 42% of the nation's food. Australia earns 15 billion AUD annually in agricultural production. The Great Artesian Basin which is 171100 square kilometre has a storage of 64900 Million Mega litres. Discussing the groundwater management in Australia, he discussed the need for effective surface water management for successful ground water management. After suffering the 1994 millennium drought and various environmental challenges the country implemented a national water reform to carry practices to prevent the impact on water quality. Highlighting the millennium drought that lasted for 10 years in Australia from 2002-2012, he brought out the need for planning and policy interventions related to water pricing, water rights, water allocation, water trading, water data accounting and reporting, science and monitoring, community engagement, institutional reform and river basin level planning for efficacy in water management. He stated that, in the coming years the world must be able to achieve "water for all" with transparency, systems thinking and other methods to know the bigger picture and be ever ready to respond in times of crisis. He concluded with a quote "Be the acceleration of change".

Panel Discussion: Water Security issues in Gurugram

Session Chair: Shri M.D. Sinha, IFS, Additional Director, HIPA

Changes in the Hydrology and Ground Water regimes in the area: Gurugram- Dr. Chetan Agarwal Forest And Environmental Services Analyst

Mr. Chetan Agarwal in his presentation shared the data on water usage in Gurugram about the declining ground water table in Gurgaon. He suggested that there is a need to take both demand side and supply side measures to tackle water scarcity. He also stressed upon adoption of innovative financial and technological measures to address the issue. The recommendations made by him were as follows:

- Hydrogeological assessment of aquifers of Gurgaon to assess natural recharge zones
- Estimation of sustainable yield of groundwater for each sector, based on natural recharge rates and supplemented with assisted recharge.
- Development of a large scale water recharge program that combines zoning and protection of natural recharge areas (Aravallis, water bodies, low lying areas, flood prone areas etc) as Natural Conservation Zone (NCZ) and complementary artificial rainwater recharge program for city areas.
- Design a water conservation program for Gurgaon (and Faridabad) which should include metering, efficiency standards for water using devices and activities, guidance on implementation in new buildings and retrofitting on old buildings.
- Setup an online registrar of tubewells laying down location, depth, logging records of all borewells

- Installation of GPS based tracking system for borewell drilling machines and water and sewage tankers.
- Making all existing borewells public assets in urban areas based on principle of intergenerational equity, and precautionary principle.
- Progressive water billing with escalating slabs.
- Levying of 'concrete tax' based on area paved within a plot or area in the city (as this will reduce recharge on the one hand and increase storm water runoff and flooding risk on the other),
- Issuing of 'recharge credit', for credible / measurable rainwater recharge at site or off-site.
- Issuance of groundwater abstraction and use permit system that caps extraction and use at sustainable yield of ground-water for each sector specifying the water allocation for a property, abstraction technology (power of pumps, diameter of pipe etc), the metering technology (smart meters - kinds of meters etc), the maximum quantity of water that can be abstracted on a daily, monthly and annual basis, the public comment and public meetings required prior to approval, the renewal process and transparent web-based sharing of such information
- Development and enforcement of regulation on grey water treatment and usage.
- Develop mandatory guidelines for preparation of master plans that incorporate the protection of areas providing ecosystem services such as groundwater recharge zones, stream buffers, flood plains, water bodies, forest and natural vegetation areas, ponds, lakes, wetlands,, charismatic trees, areas of socio-cultural significance -sacred groves
- Forming a Bureau of water-use efficiency (BWUE), on the lines of the Bureau of Energy Efficiency that rate appliances for water efficiency and also rate buildings, colonies, projects for their water-use intensity, based on water budgeting.
- Conductiing Water Impact Assessment (WIA) on similar lines as Environmental Impact Assessment

Emerging water issues and challenges and utilization of recycled water in urban context: Gurugram Case- Mr. Lalit Arora, Superintending Engineer, GMDA

Mr. Lalit highlighted that as the ground water potential is very low and there is no surface water source nearby and water supply to Gurugram is Canal based with canal water drawn from Western Yamuna Canal at Kakroi Head Works at Distt. Sonapat. The canal water supply is limited and as a measure to conserve fresh water source, GMDA has decided to use tertiary treated water for non potable uses. The decision has been taken that the Recycle water after proper treatment shall be used for Irrigation of parks, Green belts in sector 1 to 57 and also for flushing in Sector-58 to 115 Gurugram. Nearly 25% water demand i.e. 333 MLD is proposed to be met out from recycle water. He also prposed the works that need to be undertaken for effective drainage and the ways and means to arrest the run off, which would help the recharge of the ground water as well reduce the load on the existing drainage system already laid. The structural work that GMDA proposes to undertake comprise of construction of 19

check dams, 183 recharging wells and implementation of roof top rain water harvesting in the plots of area 250 sq. yards and above. He concluded by underlining the criticality for rejuvenation of existing water bodies in the city through recycled water, optimum utilization of existing canal water with smart network for uniform distribution in all the sectors, effective use recycled water for industrial, institutional, horticulture, and other non-potable purposes and rainwater harvesting by constructing recharging structures and water bodies.

Identification and inventorisation of Natural Water Bodies in Gurgaon- Mr. Rajbir Singh, IFS, Advisor, GMDA

Mr. Rajbir Singh brought out the increase in dependence for water on the canal water imported from Western Yamuna Canal system to meet the increased requirement of water in Gurugram. The volume of water drawn is estimated as more than 200 cusecs. At the same time Gurugram loses rainwater to the tune of 2000 cusecs due to flash floods and runoff during peak rain hours. He mentioned that the groundwater in the city is depleting at an alarming rate and Gurgaon Metropolitan Development Authority (GMDA) has taken several initiatives to alleviate the problem. GMDA has taken up a detailed assessment of the water bodies along with the associated streams and catchment areas in order to frame a comprehensive watershed management plan. It has reported that as per the status report prepared by the government officials, the revenue record of 1956, Survey of India maps of 1976 and satellite images of 2011-12 have indicated respectively 641, 487 and 557 water bodies in Gurugram district of which 123 are common in all the three years.

Based on this, GMDA has taken up identification and inventory of all the water-bodies in the district. All tools and technologies viz., satellite images, DIP, GPS and GIS are being used to generate an authentic and verifiable information. The output from this survey would help in framing a proper strategy and restoration plan. The water bodies that are being identified are placed in three categories - those which have vanished and no action can be taken now; those which are existing but situated in privately owned land and can be put in 'no land-use change' category and those which are existing in public land and can be appropriately developed and managed in a planned manner.

SESSION 2

Peri-urbanization and changing urban waterscape in Gurgaon – Wg Cdr (Retd) Satyam Kushwaha (TBC)

Wg Cdr (Retd) Satyam stated the need to focus on Big Data as it will help in gaining holistic understanding and building interconnections. He stressed upon the involvement of people living on peri-urban fringes in water planning and management and adoption of integrated approach with focus on local solutions. He also presented a research study on Peri-urbanization and changing urban waterscape in Gurgaon done by Ms Bhavya Chawla, alumni of TERI University. The study assesses the changes in Badshahpur Jheel over the years. It was found that the urban development plan of the government has completely ignored the traditional water systems and neglected the local people. After a thorough analysis of the development model the research study proposes the following solutions and recommendations:

Solutions

- Rainwater harvesting through gabion structure.
- Make loose stone check dams.
- Recharge johads/traditional systems using recycled water.
- Inclusive growth

Recommendations

- Inclusive growth involvement of the local population in construction activities
- Giving maintenance authority to panchayat
- Multi-stakeholders involvement for dialogue and conflict management
- Water resource planning and governance for peri-urban landscapes
- Look at social aspects
- Follow a bottom-up approach
- It is essential to bring a balance between sustainability and development

Adaptive technologies for water security – Ms Niti Saxena, Director, Sehgal Foundation

She talked about the relationship between women and water and mentioned that,

- Women are the real water managers.
- Distress migration has been observed in the areas where water is saline.
- Various studies done by Sehgal Foundation reveals that the drudgery of women to collect water and water scarcity is leading to migration.
- Another research study of Sehgal Foundation has found that women are undergoing more drudgery (2 to 4 hours to fill one pot of water) in sweet water villages than in brackish water villages. This is because the government is supplying water through tankers in brackish water villages.

She also brought the issue of groundwater exploitation, extraction is more than recharge. This is contributing to an increase in salinity in the majority of the regions. To tackle this problem Sehgal Foundation has developed an innovative and cost-effective technology named as Pressurized Recharge Well Model. The model enables the creation of a fresh/rain water pool by pushing saline water sideways using Hydrostatic pressure. This model has been

successfully replicated in 15 institutions, 18 households and 45 agricultural farms in Nuh district of Haryana. However, this recycled water is of diminished quality and is not fit for use without tertiary treatment.

Empowering Women at the Grassroots for water management- Ms Chandni Bedi Taneja, Director – Rural Management & Training Institute, Navjyoti India Foundation

Ms. Chandini talked about the work done to solve the water management issues in Sohna Gaon of Gurugram district, Haryana by Navjyoti India Foundation. In 2005, the rural water supply program of the government provided tap water for all the households in Sohna Gaon reducing the drudgery of women. The availability of tap water in the village has led to the death of Johads. Moreover, the wastage of tap water (especially amongst high-income groups) had become a common phenomenon in the village leading to water shortages. The Navjyoti Foundation decided to step in by adopting a holistic approach to solve this issue. She presented the following key highlights of their work-

- Restoration of the johads was done with the help of the community. The women only from lower income group participated in the construction activities.
- Formation of women self-help groups was done to empower them economically before involving them in water conservation activities.
- To stop the wastage of water a group of 8 to 10 women was formed which is known as “Paani Police” to monitor the wastage. They were also given the powers to stop the defaulters from wasting water.

She held the view that women empowerment cannot be looked into in isolation. There is a need to look at social relation in intrahousehold and society and thus engage with men and children. Empowerment of both men and women is essential for water management.

SESSION 3

Conceptualizing Gender Dr. Anjal Prakash, TERI School of Advanced Studies

Dr. Anjal helped in understanding how ‘Gender’ is different from ‘Sex’. Sex is the natural biological identity. It is based on physical, biological and sexual reproductive features. Gender is a social construct. Gender influences our thinking and creates roles by building artificial boundaries and differences. Hence, gender construction leads to exclusion and overpowering of natural identity and social identity becomes stronger and gets embedded in the society. Gender is created through the process of socialization. Family is one of the strongest elements in this process. These influences lead to Gender stereotyping. He also explained how inequality is created based on ideology and power. Further he described how social stratification happens based on the idea that people can be ranked differently in terms of their social importance or status, the unequal distribution of goods and services, rights and obligations, power and prestige and all attributes of positions in society, not attributes of individuals. Finally he explained the difference between equality and equity.

SESSION 4

Group Activity – Gender sensitization games

Dr. Anjal conducted two games to sensitize the participants with gender, equity and water management.

Water Fetching Game

The game was played in two rounds. The first round had five teams and the second round had 3 teams. Each team had five participants. A water marathon was organized between points A and B. We would have a point A and Point B. It was interesting to watch the power dynamics at the water filling point. The activity sensitized the participants by actually experiencing what it takes to fetch water and why water points are needed close to house.

Bindi Game

Bindis of five different colours were pasted on the head of the participants. The game was conducted to demonstrate how a person feels when he or she is different from others.

SESSION 5

Institutions, Gender and Equity: Understanding the relationships in water access Prof Vishal Narain, MDI, Gurgaon

The session focused on understanding concepts of equity, equality and institutions. It tried to explain the role of institutions in shaping access and the value of a gender perspective in water resource management. Finally, the session examined the factors that can lead to a transformation of gender relations. The discussion revealed that equality is about sameness while equity is about fairness. There is no bench mark for equity as it is a value laden concept while equality is often measurable. Equity is more difficult to acquire as it depends on different ways, perceptions and values of stakeholders. Equity as a whole is a broader concept of justice and gender is one of the smaller dimensions of equity in social sciences. Other dimensions that are often looked at separately or together are class, caste and religion.

The next point of discussion was understanding institutions and resource access. Institutions are regularized patterns of interaction through which the society organizes itself. They are sets of norms, rules and conventions. Law, property rights and social relationships are all forms of institution. These institutions can be written or unwritten and may or may not be explicit. Institutions are different from organizations which are groups of people bound by some common objective. North (1990) categorized four types of organizations namely Political, Social, Economic and Religious. Through examples the presentation revealed the importance of institutions for resource access. For example, the wood fuel crisis in Africa showed how institutional scarcity might be more important than physical scarcity. Hence, property rights, gender relations, systems of land tenure, markets and rights shape access to resources like water. Understanding such factors like gender relations are important for

understanding and planning solutions. Having a gendered perspective helps understand that men and women access resource differently. Gender is a social construction that is located in time and space. For example, Drew's study on rice transplantation showed how gender was located in space wherein in some countries transplanting was a man's role and women's role in another. Further, gender also intersects with other axes of social differentiation to shape access to water and gender relations are not static. Two examples were discussed. In Sultanpur case study daily migration of men for employment to urban centre changed gender role. Originally upper caste women of Sultanpur did not go collect water and had to wear the veil. However, when men started working in urban centres they didn't have time to collect water. This forced the women to start collecting water and even break the earlier rules of wearing the veil and staying indoors. Another example was the Budhera village where acquisition of common property resources led to changing gender role. Grazing is considered a man's work but when grazing land was acquired by the government the cattle were stall fed. This work of fodder collection and stall feeding became responsibility of women increasing their workload.

Approaches to mainstreaming gender in the water sector: Issues and Experiences

In this session emphasis was laid on looking at water issues as gender issue and not a women's issue alone and viewing it from the perspective of the differential relationship that men and women share in managing water. Explaining it with the example of a government scheme, he mentioned that if you look at the scheme from a gendered lens, you will have to understand what the differential role of men and women in the scheme is. As in when the scheme is implemented, how it is going to affect men and women independently. Instead of assuming that women are not engaged in irrigation it would be appropriate to investigate their involvement. The way to operationalize gender or to bring gender to the mainstream is to ask question- who does what? Understanding gender relations would help understand how roles are divided in a work. It is also important to consider the relative roles of men and women in the farm, in household and how these roles have changed overtime.

SESSION 6

Understanding water rights and property right regimes and importance and role of common property resources and the reasons for their demise; Prof Vishal Narain, MDI, Gurgaon

The session mainly focused on understanding Tragedy of the Commons, property right regimes and Legal Pluralism. Tragedy of commons was first discussed by Hardin. He used the example of a grazing land to describe a situation in open access resource where individual acting independently according to their own self-interest behave contrary to the common good of all users and lead to destruction or depletion of a common resource. In such conditions the demand overwhelms supply and the resource becomes unavailable to some or all. These commons followed open access property regimes. Similarly there are 4 property regimes for natural resources namely State Property, Common Property, Private Property and

Open access. In India water fall under all the property regimes. All surface rives are considered the propert of the governemtn are hence state property. A large number of ponds and similar surface resources often community mamanged or have open access rights. Lastly groundwater in India becomes a private property owing to it attached nature to land. This means that the individual who owns the land owns the groundwater beneath the land. Such private right often lead to increased inequity in the system by excluding a large proportion of the population who are landless. Hence, do not have access to water. Examples from field were discussed to understand the changing rights systems in different parts of India. Groundwater markets and their increased impacts on inequity was also discussed through examples from Gujarat highlighted in books including *Tubewell Capitalism*, Navroz Dubhash and *Dark Zone*, Anjal Prakash. The next topic discussed was legal pluralism. Legal pluralism is a conceptual lens and deals with the social significance of law. It says that there is a divergence between what people should do from a state law perspective and what they actually do. These differences are captured using two concepts namely concretization of rights and materialization of rights. Under such a system more than one form of right governs a water resource. The example of Dipor bill in Assam was discussed to illustrate legal pluralism. Dipor bill is a Ramsar wetland site where fishing is strictly prohibited under state law. *Magh Bihu* is an important cultural festival in the same area which is celebrated with community fishing. Hence, only on the day of the festival even though state law prohibits fishing, community fishing is allowed due to customary traditions. This situation captures the heart of legal pluralism. Hence, under legal pluralism different bases of rights co-exist, In most case state law co-exists with customary rights and practices with the latter often take precedence over the former.

SESSION 7

Prof Vishal Narain, MDI, Gurgaon

- Understanding legal pluralism in water access

Discussion of paper- “Mediating scarcity by design: water rights and legal pluralism in protective irrigation”

- Translating our understanding of Gender to policy and planning

Discussion of paper “Shifting the focus from Women to Gender Relations: Assessing the impacts of Drinking Water Supply interventions in The Morni -Shiwalik Hills of North West India”

The participants were divided into two groups and they were given time to read the case studies. Later they were asked to share their learnings from the two cases.